## Space Weather Forecast

Issued on Wednesday, 29 June 2022 at 01:10 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Slight chance of Moderate-class flares.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity has been Very Low over the past 24 hours, with no significant flares observed. There are five sunspot regions on the visible disk. The largest region is located in the southwest quadrant, though appears to be magnetically stable at this time. All remaining regions are small and simple groups.

There are considered to be no new Earth-directed Coronal Mass Ejections (CMEs) showing on available imagery. However, a large filament lift off from around N20, just east of the centre disc around 28/2200 UTC will be assessed when further imagery becomes available.

**Solar Wind / Geomagnetic Activity:** The solar wind speed was largely elevated, varying between 490-560 km/s, suggesting the ongoing influence of a coronal hole high speed stream. The total magnetic field strength was weak, with only small fluctuations in its important North-South component. The resulting geomagnetic activity was Quiet to Unsettled (Kp 1-3).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms occurring.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Solar activity is likely to be Low or Very Low, with only a slight chance of isolated M-class flares.

**Solar Wind / Geomagnetic Activity:** A very slow CME which left the Sun on the 26th June may arrive at Earth on the 2nd July (Day 4). No other earth-directed CMEs currently feature in the forecast, however, the large filament eruption from around N20 in the eastern hemisphere around 28/2200 UTC will be assessed once more imagery becomes available. Solar winds are expected to slowly come back to slow-ambient levels over the next two or three days as the influence from two small coronal holes currently present on the far western hemisphere wanes. No further significant enhancements are expected over the next four days. Geomagnetic activity is currently expected to be mainly Quiet with isolated Unsettled intervals through the period.

**Energetic Particles / Solar Radiation:** In the absence of any significant sunspot development, the count rate of energetic particles (high energy protons) is forecast to persist at background levels, with no solar radiation storms occurring.

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Met Office

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 1 | 1 | 1 | 1 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 10 | 5 | 5 | 5 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 1 | 1 | 1 | 1 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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